

What is claimed:

1. An isolated nucleic acid molecule comprising a nucleotide sequence at
5 least 80% identical to the nucleotide sequence of SEQ ID NO:3, wherein the nucleic
acid molecule encodes polypeptide comprising an N-terminal mGluR-like domain and a
C-terminal unique domain.

2. The nucleic acid molecule of claim 1, comprising a nucleotide sequence
10 at least 90% identical to the nucleotide sequence of SEQ ID NO:3.

3. The nucleic acid molecule of claim 1, comprising a nucleotide sequence
at least 95% identical to the nucleotide sequence of SEQ ID NO:3.

4. An isolated nucleic acid molecule which encodes a polypeptide
15 comprising an amino acid sequence at least 80% identical to the amino acid sequence of
SEQ ID NO:2, wherein the polypeptide comprises an N-terminal mGluR-like domain
and a C-terminal unique domain.

5. An isolated nucleic acid molecule which encodes a polypeptide
20 comprising an amino acid sequence at least 80% identical to the amino acid sequence of
SEQ ID NO:2, wherein the polypeptide lacks a transmembrane domain.

6. An isolated nucleic acid molecule which encodes a polypeptide
25 comprising an amino acid sequence at least 80% identical to the amino acid sequence of
SEQ ID NO:2, wherein percent identity is determined using a global alignment
algorithm.

7. The nucleic acid molecule of claim 6, wherein percent identity is
30 determined according to the ALIGN algorithm using a PAM120 weight residue table, a
gap length penalty of 12 and a gap penalty of 4.

8. The nucleic acid molecule of any one of claims 4-7, wherein the amino
acid sequence encoded is at least 90% identical to the amino acid sequence of SEQ ID
35 NO:2.

9. The nucleic acid molecule of any one of claims 4-7, wherein the amino acid sequence encoded is at least 95% identical to the amino acid sequence of SEQ ID NO:2.

5 10. An isolated nucleic acid molecule which hybridizes to a complement of a nucleic acid molecule comprising SEQ ID NO:3 under stringent conditions, wherein the nucleic acid molecule encodes polypeptide comprising an N-terminal mGluR-like domain and a C-terminal unique domain.

10 11. An isolated nucleic acid molecule which hybridizes to a complement of a nucleic acid molecule comprising SEQ ID NO:1 under stringent conditions, wherein the nucleic acid molecule encodes a polypeptide lacking a transmembrane domain.

15 12. An isolated nucleic acid molecule comprising the DNA insert of the plasmid deposited with ATCC as Accession Number PTA-2775.

13. An isolated nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1, or a complement thereof.

20 14. An isolated nucleic acid molecule which encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

25 15. The nucleic acid molecule of any one of claims 1, 4-6 and 10-14, further comprising vector nucleic acid sequences.

16. The nucleic acid molecule of any one of claims 1, 4-6 and 10-14, further comprising nucleic acid sequences encoding a heterologous polypeptide.

30 17. A host cell which contains the nucleic acid molecule of any one of claims 1, 4-6 and 10-14.

18. The host cell of claim 17 which is a mammalian host cell.

35 19. A non-human mammalian host cell comprising the nucleic acid molecule of claim any one of claims 1, 4-6 and 10-14.

20. An isolated polypeptide encoded by a nucleic acid molecule comprising a nucleotide sequence at least 80% identical to the nucleotide sequence of SEQ ID NO:3,

wherein the polypeptide comprises an N-terminal mGluR-like domain and a C-terminal unique domain.

21. The polypeptide of claim 20, encoded by a nucleic acid molecule
5 comprising a nucleotide sequence at least 90% identical to the nucleotide sequence of
SEQ ID NO:3.

22. The polypeptide of claim 20, encoded by a nucleic acid molecule
10 comprising a nucleotide sequence at least 95% identical to the nucleotide sequence of
SEQ ID NO:3.

23. An isolated polypeptide comprising an amino acid sequence at least 80%
15 identical to the amino acid sequence of SEQ ID NO:2, wherein the polypeptide
comprises an N-terminal mGluR-like domain and a C-terminal unique domain.

24. An isolated polypeptide comprising an amino acid sequence at least 80%
identical to the amino acid sequence of SEQ ID NO:2, wherein the polypeptide lacks a
transmembrane domain.

25. An isolated polypeptide comprising an amino acid sequence at least 80%
20 identical to the amino acid sequence of SEQ ID NO:2, wherein percent identity is
determined using a global alignment algorithm.

26. The polypeptide of claim 25, wherein percent identity is determined
25 according to the ALIGN algorithm using a PAM120 weight residue table, a gap length
penalty of 12 and a gap penalty of 4.

27. The polypeptide of any one of claims 23-26, comprising an amino acid
30 sequence at least 90% identical to the amino acid sequence of SEQ ID NO:2.

28. The polypeptide of any one of claims 23-26, comprising an amino acid
sequence at least 95% identical to the amino acid sequence of SEQ ID NO:2.

29. An isolated polypeptide encoded by a nucleic acid molecule which
35 hybridizes to a complement of a nucleic acid molecule comprising SEQ ID NO:1 under
stringent conditions, wherein polypeptide comprises an N-terminal mGluR-like domain
and a C-terminal unique domain.

30. An isolated polypeptide encoded by a nucleic acid molecule which hybridizes to a complement of a nucleic acid molecule comprising SEQ ID NO:1 under stringent conditions, wherein the nucleic acid molecule encodes a polypeptide lacking a transmembrane domain.

5

31. An isolated polypeptide encoded by the DNA insert of the plasmid deposited with ATCC as Accession Number PTA-2775.

32. An isolated polypeptide encoded by a nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1.

10

33. An polypeptide comprising the amino acid sequence of SEQ ID NO:2.

34. The polypeptide of claim any one of claims 20, 23-25 and 29-33, further comprising heterologous amino acid sequences.

15

35. An antibody which selectively binds to the polypeptide of any one of claims 20, 23-25 and 29-33.

36. A method for producing a polypeptide encoded by the nucleic acid molecule of any one of claims 1, 4-6 and 10-14, comprising culturing a host cell which contains the nucleic acid molecule, under conditions in which the nucleic acid molecule is expressed.

20

37. A method for detecting the presence of the polypeptide of claim any one of claims 20, 23-25 and 29-33 in a sample comprising:

25

a) contacting the sample with a compound which selectively binds to the polypeptide; and

b) determining whether the compound binds to the polypeptide in the sample to thereby detect the presence of the polypeptide in the sample.

30

38. The method of claim 37, wherein the compound which binds to the polypeptide is an antibody.

39. A kit comprising a compound which selectively binds to a polypeptide of any one of claims 20, 23-25 and 29-33 and instructions for use.

35

40. A method for detecting the presence of the nucleic acid molecule of any one of claims 1, 4-6 and 10-14 in a sample comprising:

- a) contacting the sample with a nucleic acid probe or primer which selectively hybridizes to the nucleic acid molecule; and
- 5 b) determining whether the nucleic acid probe or primer binds to a nucleic acid molecule in the sample to thereby detect the presence of the nucleic acid molecule in the sample.

41. The method of claim 40, wherein the sample comprises mRNA
10 molecules and is contacted with a nucleic acid probe.

42. A kit comprising a compound which selectively hybridizes to the nucleic acid molecule of any one of claims 1, 4-6 and 10-14 and instructions for use.

15 43. A method for identifying a compound which modulates mGluR activity in a cell comprising:

- a) contacting a cell expressing the mGluR with the polypeptide of any one of claims 20, 23-25 and 29-33 and a test compound; and
- 20 b) determining whether the test compound modulates the ability of the polypeptide to modulate mGluR activity as compared to an appropriate control.

44. A method for modulating the activity of a mGluR comprising contacting a cell expressing the mGluR with the polypeptide of any one of claims 20, 23-25 and 29-
25 33, or a modulator of said polypeptide, in a sufficient concentration to modulate the activity of the mGluR.

45. A method for modulating neuronal cell signaling comprising contacting a neuronal cell with the polypeptide of any one of claims 20, 23-25 and 29-33, or a
30 modulator of said polypeptide, in a sufficient concentration to modulate at least one signaling pathway of the neuronal cell.

46. The method of claim 45, wherein the neuronal cell expresses an mGluR receptor.
35

47. The method of claim 46, wherein the mGluR5 receptor is mGluR5a or mGlu5b.

48. A method for treating a subject having a neurological disorder comprising administering to said subject an effective amount of the polypeptide of claim any one of claims 20, 23-25 and 29-33, or a modulator of said polypeptide, such that the neurological disorder is treated.

5

49. A method for treating a subject having a psychiatric disorder comprising administering to said subject an effective amount of the polypeptide of any one of claims 20, 23-25 and 29-33, or a modulator of said polypeptide, such that the psychiatric disorder is treated.

10

50. The method of claim 49, wherein the psychiatric disorder is schizophrenia.

51. The method of claim 49, wherein the psychiatric disorder is schizoaffective disorder.

15

52. The method of claim 49, wherein the psychiatric disorder is bipolar affective disorder.

53. The method of claim 49, wherein the psychiatric disorder is unipolar affective disorder.

20

54. The method of claim 49, wherein the psychiatric disorder is adolescent conduct disorder.

25

55. The method of claims 44, wherein the modulator is selected from the group consisting of a mGluR5M nucleic acid molecule, a mGluR5M antibody or active antibody fragment, a ribozyme, an antisense nucleic acid molecule, a small molecule modulator, a peptide and a peptidomimetic.

30

56. The method of claims 45, wherein the modulator is selected from the group consisting of a mGluR5M nucleic acid molecule, a mGluR5M antibody or active antibody fragment, a ribozyme, an antisense nucleic acid molecule, a small molecule modulator, a peptide and a peptidomimetic.

35

57. The method of claims 48, wherein the modulator is selected from the group consisting of a mGluR5M nucleic acid molecule, a mGluR5M antibody or active

antibody fragment, a ribozyme, an antisense nucleic acid molecule, a small molecule modulator, a peptide and a peptidomimetic.

58. The method of claims 49, wherein the modulator is selected from the
- 5 group consisting of a mGluR5M nucleic acid molecule, a mGluR5M antibody or active antibody fragment, a ribozyme, an antisense nucleic acid molecule, a small molecule modulator, a peptide and a peptidomimetic.